

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of applications for water permits to take and use
water from the Hakataramea river and its
tributaries

BY ROBERT HAY ROBERTSON
RPNZ PROPERTIES LIMITED
RG AND ZL PRINGLE
RW AND ME SUTTON
STAR HOLDINGS LIMITED
NJ SMALL
HAKATARAMEA STATION (1990) LIMITED

Applicants

TO ENVIRONMENT CANTERBURY

Local Authority

**SUPPLEMENTARY STATEMENT OF EVIDENCE BY ROBERT JAMES HALL
IN REPLY TO COMMISSIONERS' MINUTE DATED 3 DECEMBER 2009**

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INTRODUCTION

- 1.1 My name is Robert James Hall. I am a chartered professional engineer (Civil and Geotechnical registers) employed by GHD Ltd. and based in Timaru.
- 1.2 My qualifications and experience are set out in my evidence in chief presented in 21 August 2008.
- 1.3 This additional evidence is provided to the Commissioners in response to their minute to the parties dated 3 December 2009.
- 1.4 I set out my qualifications again. This is because my evidence in chief, and later evidence in reply dated 24 September 2008, related to dam engineering matters, whereas this evidence predominantly pertains to hydrological matters in the Hakataramea River.

QUALIFICATIONS AND EXPERIENCE

- 1.5 I hold a Masters Degree in Natural Resources Engineering (Lincoln University), a Bachelors Degree in Civil Engineering (Canterbury University), a N.Z. Certificate in Engineering (Civil) and have completed the Graduate Course in Surface Water Hydrology (university of NSW, Kensington, Sydney Australia). I am a member of IPENZ and a member of the NZ Hydrological Society, NZ Structural Engineering Society, N.Z. Geotechnical Society and New Zealand Society of Large Dams.
- 1.6 I have 41 years experience in Civil Engineering in New Zealand, of which I have worked 33 years as a professional engineer. For the past 30 years I have been employed variously by the Hawke Bay Catchment Board and Regional Water Board, the Waitaki Catchment Commission and Regional Water Board, the Bay of Plenty Catchment Commission and Regional Water Board, Marlborough Catchment Board and Regional Water Board, South Canterbury Catchment Board and Regional Water Board, Environment Canterbury and as a consultant engineer. A principle function of my employment over this time has been in engineering hydrology and related matters (flood hydrology, flood warning systems and procedures, flood hazard assessment and mapping, promoting flood hazard awareness, design of flood protection systems, storm water systems and the management of river systems including major braided South Island rivers and steep gravel bed rivers on alluvial fans). This work has involved developing structural and non-structural responses to flood, and flood related hazards, and developing and promoting Canterbury Regional Council policy with respect to such matters both as an employee and in an engineering consultant capacity.
- 1.7 I have a particular interest in seeing the development of on farm storage to support irrigation activities in catchments where water yield during the irrigation season are variable and seasonally unreliable, and in the interests of promoting the efficient use of water. I am presently

actively involved in the investigation, design and construction supervision of a number of zoned earth dams in the South Canterbury – Waitaki – North Otago area for the harvesting and storage of irrigation water.

- 1.8 I am familiar with the Hakataramea Valley and its tributaries in particular the form and morphology and have an understading of their hydrological characteristics, experience gained initially through my employment with the Waitaki Catchment Commission and Regional Water Board and more recently through my employment by the South Canterbury Catchment Board and Regional Water Board, Environment Canterbury, and as a Consultant Engineer.
- 1.9 In October 1995 I left the employment of Environment Canterbury (Principle Engineer Hazards and Structures) to establish R.J.Hall Civil and Environmental Consulting Ltd. which I subsequently merged with GHD Ltd in October 2007.
- 1.10 I have been engaged by the Applicant, Robert Hay Robertson, to present evidence on his behalf on matters relating to the harvesting of surface water from Homestead Stream, a tributary of the Hakataramea River. In presenting this evidence I draw on evidence that I presented to the Waitaki Catchment Water Allocation Board hearings in 2005 in support of submissions of Zeta Lyne Pringle, Robert Pringle, Hakataramea Station 1990 Ltd (Gerald Hayman), and RPNZ Properties Ltd. and Caberfeidth Station, a copy of that evidence is appended. I **attach** a copy of that evidence to this statement of evidence.
- 1.11 The evidence that I present on behalf of Robert Hay Robertson relates to water harvesting from Homestead Stream, a tributary of the Hakataramea River. In broad terms the form, morphology and hydraulic and hydrological behaviour of Homestead Stream is replicated to a greater or lesser extent in the other main tributaries of that river once cognizance of the aspect, lithology, size, altitudinal range and precipitation patterns (rainfall, snow fall) of each of those various tributaries is accounted for.
- 1.12 The evidence that I present is equally applicable to those other Applicants in the Hakataramea Catchment seeking to harvest water from the tributaries.
- 1.13 I am familiar with the Code of Conduct for Expert Witnesses and I agree to comply with this code. The evidence I will present today is within my area of expertise, except where I state that I am relying on information provided by another party. I have not knowingly omitted facts of information that might alter or detract from the opinions I express.

SCOPE OF EVIDENCE

1.14 Drawing on my **attached** statement of evidence I will concentrate on:

- a generic description of the tributaries of the Hakataramea River where water harvesting is proposed, covering form, morphology, seasonal variations in flow, the ephemeral nature of those tributaries and their relationship to flow in the Hakataramea River
- the manner in which water has traditionally been abstracted and the problematic nature of this approach when employed for harvesting at higher flows
- the necessity for storage in order to provide reliability to existing consents during the irrigation season, and the importance of harvesting outside the irrigation season to achieve that reliability.
- The inherent difficulties in attempting to establish and maintain hydrometric sites on the tributaries, the implications that has for the reliability of the data provided by such sites required as they would be for the primary purposes of setting, observing and complying with minimum flows

Dated 3rd March 2010

Robert James Hall